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| Breakout 2: Tuesday Morning Examining Student Responses | |  |
| 120 minutes | Math Learning Goals   * Participants will gain an understanding of the various representations for one half, which ones are correct, and which ones are misleading or confusing * By looking at student work, participants will recognize and analyze various representations of one half and some of the common misconceptions that are evident * Participants will gain an understanding of the complexity of working with set models in fractions * Participants will gain an awareness of the existence of fractional concepts in other areas of the mathematics curriculum | Materials   * Copies of the Gap Closing Diagnostic – 1 per participant * Copy of EQAO problem * Student work * Examples from partitioning chapter * Marilyn Burns examples * Curriculum Documents * Chart paper, markers |
|  | 🡪 Analyzing Various Representations for one-half  Teachers individually look at the original diagnostic from the Gap Closing. Next, they engage in a think/pair/share to discuss which representations they would like to further discuss because they anticipate they will cause difficulty for the students. This is followed by a whole group discussion about the chosen representations. |  |
| Minds On… |
| 20 minutes |
|  | 🡪Analyzing various representations in student work  Ask participants to solve the following EQAO problem in a number of ways. Predict and discuss potential misconceptions that students may have and what you may see in the work from a child who may struggle with the concept of one half.  EQAO tree problem from 2005-06 (*Ryan is given the following problem to solve. “There are 30 maple trees on a farm. Half the trees have been tapped for sap. What is the total number of trees that have been tapped for sap?” Ryan gets an answer of 18 trees. Is his answer correct?*)  **Small Group**  In small groups, participants look at samples of solutions from students grades K – 4 and discuss using the following guiding questions. Give participant some of the examples from the Petit et al book to see if any of these different representations are evident in the student work.  **Guiding Questions**:  What mathematical understanding do we see in the work?  Do we see any of the misconceptions Marian mentioned in the work?  What are some of the misconceptions that were not part of the plenary?  What strategies could be used to help students better understand the concept of fractions?  **Whole Group Discussion**  As a whole group, identify trends in the work. Share strategies that would help students better understand fractions.  **Pair Consolidation**  Marilyn Burns Activity – More or less than one half?   * Joe struck out 7 out of 17 batters * Jean made 8 baskets of 11 free throws * Bill made 5 field goals out of 9 attempts * Suzanne made 8 hits in 15 times at bat   Participants can make their own situation and exchange with a partner |  |
| Action! |
| 15 minutes  40 minutes  15 minutes |
|  | 🡪 Making connections with other areas of the curriculum    Using the curriculum document, small groups of participants choose a grade K to 4 and find fractional concepts and understandings in a place/strand where you would previously not have anticipated. How do different models link to the curriculum?  **Reflection:**  For your journal/treasure chest, record how can you use this knowledge to enrich students’ understanding and help them make connections |  |
| Consolidate Debrief |
| 15 minutes |
|  | Home Activity or Further Classroom Consolidation |  |

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| Unit #: Day #: (Title) | | Grade |
| **Time Bar:**  Indicate the timing for each section. | Math Learning Goals   * Two or three math learning goals for this lesson. | Materials   * list materials required |
|  | Identify Grouping 🡪 Strategy  Get students mentally engaged in the first minutes of the class and establish a positive classroom climate, making every minute of the math class count for every student.   |  |  | | --- | --- | | *Connect to careers*  *Connect to other strands*  *Connect to previous lesson*  *Connect to student interest*  *Orient students to an activity*  *Orient students to materials* | *Develop interpersonal skills*  *Develop learning skills*  *Introduce a problem*  *Do a motivating activity*  *Pose a question*  *Reflect on prior learning*  *Connect to previous group of lessons* | | Plan links between assessment and instruction:  1) Identify what will be assessed (curriculum expectations or learning skills).  2) Choose an appropriate assessment strategy.  3) Choose an appropriate assessment scoring tool. |
| Minds On… |
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|  | Identify Grouping 🡪 Strategy  **Students** domathematics: fearless talking and listening, reflecting, discussing, observing, investigating, representing, reasoning, selecting tools and computational strategies, developing understanding, valuing mathematics, constructing concepts, demonstrating concepts, applying concepts, discovering relationships, exploring, hypothesizing, building algorithmic skills, etc.  **Teachers** plan appropriate student groupings and strategies, pose questions to expose thinking, listen carefully, observe, offer prompts when necessary, respond to provide appropriate scaffolding and challenge, etc.  **NOTE: Icons in sidebar** ( e.g. ) **can be copied into your TIPS 2.0 template.** | Explicitly label:   * *Assessment* ***for*** *learning*  (inform future instruction)  * *Assessment* ***as*** *learning*  (reflection)  * *Assessment* ***of*** *learning*  (student achievement). |
| Action! |
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|  | Identify Grouping 🡪 Strategy  “Pull out the math,” check for conceptual understanding, and prepare students for the follow-up activity or the next lesson. Often this involves whole class discussion and sharing. Students listen to and contribute to reflections on alternate approaches, different solutions, extensions, and connections.  **Note:** Students should be well prepared to do mathematics individually after the three-part lesson. | Explicitly identify planned differentiation of content, process, or product based on readiness, interest, or learning preference in order to work in zone of proximal development; save time; give students choice, …  Provide hyperlinks to:   * Rationale/research  * Video  * Lesson artefacts  * Professional  dialogue |
| Consolidate Debrief |
|  |
| <Choose relevant label(s)>  Application  Concept Practice  Differentiated  Exploration  Reflection  Skill Drill | Home Activity or Further Classroom Consolidation  Provide meaningful and appropriate follow-up. Choose activities that consolidate understanding, build confidence in doing mathematics independently, help parents see the types of math activities students engage in during class and see connections between the mathematics being taught and life beyond the classroom. Give students some choice through differentiated activities. | Your plan should include activities that are:   * visual * kinesthetic * auditory |



For an annotated example, please see *Mathematics GAINS –Professional Learning Series Facilitator’s Guide*, pdf, page 5